Mathematics Standard Articulated by Grade Level

Strand 1: Number and Operations

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of all mathematical strands.

Concept 1: Number Sense	The concept of understanding and applying numbers, ways of representing numbers, and the relationships among numbers and different number systems.
Concept 2: Numerical Operations	The concept of understanding and applying numerical operations and their relationship to one another.
Concept 3: Estimation	The concept of using estimation strategies reasonably and fluently while integrating content from each of the other strands.

Strand 2: Data Analysis, Probability, and Discrete Mathematics

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of mathematical strands.

Concept 1: Data Analysis (Statistics)	The concept of understanding and applying data collection, organization, and representation to analyze and sort data
Concept 2: Probability	The concept of understanding and applying the basic concepts of probability.
Concept 3: Systematic Listing & Counting	The concept of understanding and demonstrating the systematic listing and counting of possible outcomes.
Concept 4: Vertex-Edge Graphs	The concept of understanding and applying vertex-edge graphs.

Mathematics Standard Articulated by Grade Level

Strand 3: Patterns, Algebra, and Functions

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of all mathematical strands.

Concept 1: Patterns	The concept of identifying patterns and applying pattern recognition to reason mathematically while integrating the content from each of the other strands.
Concept 2: Functions and Relationships	The concept of describing and modeling functions and their relationships.
Concept 3: Algebraic Representations	The concept of representing and analyzing mathematical situations and structures using algebraic representations.
Concept 4: Analysis of Change	The concept of analyzing how changing the values of one quantity corresponds to change in the values of another quantity.

Strand 4: Geometry and Measurement

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of all mathematical strands.

Concept 1: Geometric Properties	The concept of analyzing the attributes and properties of two- and three- dimensional figures and developing mathematical arguments about their relationships.
Concept 2: Transformation of Shapes	The concept of applying spatial reasoning to create transformations and using symmetry to analyze mathematical situations.
Concept 3: Coordinate Geometry	The concept of specifying and describing spatial relationships using rectangular and other coordinate systems while integrating content from each of the other strands.
Concept 4: Measurement	The concept of understanding and applying appropriate units of measure, measurement techniques, and formulas to determine measurements.

Mathematics Standard Articulated by Grade Level

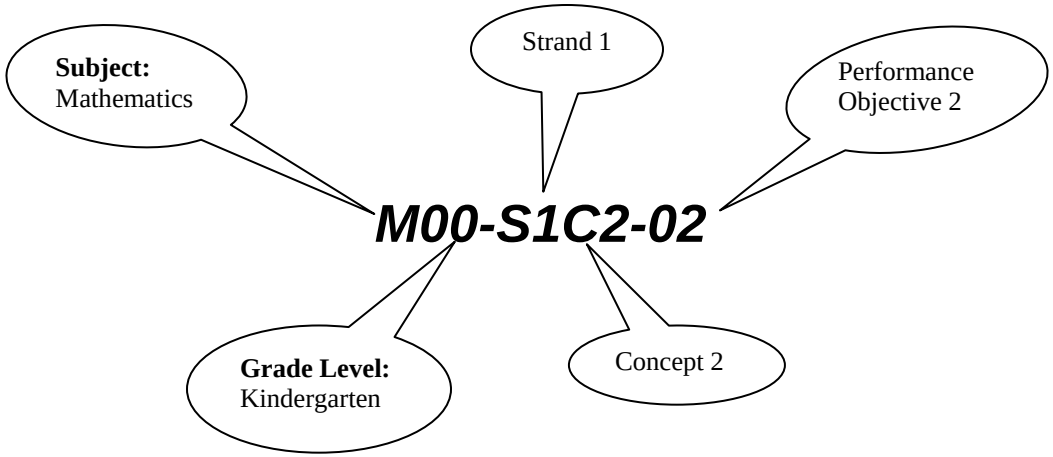
Strand 5: Structure and Logic

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of all mathematical strands.

Concept 1: Algorithms and Algorithmic Thinking	The concept of using reasoning to solve mathematical problems.
Concept 2: Logic, Reasoning, Problem Solving and Proof	The concept of evaluating situations, selecting problem-solving strategies, drawing logical conclusions, developing and describing solutions and recognizing their applications.

Mathematics Standard Articulated by Grade Level

Coding for Articulated Standards



Examples of Mathematics items:

M04-S3C1-03 (Grade 4, Strand 3, Concept 1, PO 3)
MHS-S2C2-01 (High School, Strand 2, Concept 2, PO 1)
MCWR-S5C1-03 (College Work Readiness, Strand 5, Concept 1, PO 3)

Connections are provided in the Mathematics Standard where appropriate in the grade level documents. Connections to the Language Arts Standards are embedded throughout the Mathematics Standard so those connections are not explicitly listed. Examples of coding for other subjects are shown below:

Examples of Science items:

SC01-S1C2-02 (Grade 1, Strand 1, Concept 2, PO 2)
SCHS-S5C1-01 (High School, Strand 5, Concept 1, PO 1)

Examples of Social Studies items:

SS01-S1C2-02 (Grade 1, Strand 1, Concept 2, PO 2)
SSHS-S5C1-01 (High School, Strand 5, Concept 1, PO 1)